

U.S.S.N. 10/707,612

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03-1090 (BOE 0467 PA)

In The Specification:

Please replace paragraph [0003] with the following amended paragraph:

[0003] Besides translucency, materials used in aircraft interior components must meet strict Federal Aviation Administration (FAA) requirements in terms of flammability resistance properties (FAR 25.853 and Appendix F), including heat release, vertical burn, smoke emissions tests, and ~~toxic fume emissions tests~~ Boeing's D6-51377 Toxic Gas Emissions Limits. For example, the standard test method for heat release is the Ohio State University heat release test as found in FAR 25.853-Part IV.

Please replace paragraph [0004] with the following amended paragraph:

[0004] Prior art plastic materials used in commercial aircraft could not typically achieve the combination of a desired transmissivity of light while meeting FAA requirements in terms of flammability resistance properties (FAR 25.853 and Appendix F), vertical burn, smoke emissions tests, and ~~toxic fume emissions tests~~ Boeing's D6-51377 Toxic Gas Emissions Limits. As such, interior components have typically been made of non-translucent (opaque), or marginally translucent plastic materials that meet these FAA requirements.

Please replace paragraph [0006] with the following amended paragraph:

[0006] The present invention discloses composite materials that meet or exceed the FAA requirements in terms of flammability resistance properties (FAR 25.853 and Appendix F), including heat release, vertical burn, smoke emissions tests, and ~~toxic fume emissions tests~~ Boeing's D6-51377 Toxic Gas Emissions Limits. The composite materials are post-processed to form various translucent components used throughout the interior of a cabin on an aircraft that allow transmissivity of desirable amounts of light.

Please replace paragraph [0017] with the following amended paragraph:

[0017] The materials also meet flammability standards. For example, the standard test method for heat release is the Ohio State University heat release test as found in FAR 25.853, Part IV, in which the maximum allowable average heat release for interior panels contained within the cabin area of commercial airlines does not exceed $65\text{kw}_{\text{min}}/\text{m}^2$ as measure at a two minute interval and for a peak rate $65\text{kw}/\text{m}^2$ at five minutes. This is also known in the industry as the 65/65 standard (peak heat release/total heat release).

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Please replace paragraph [0018] with the following amended paragraph:

[0018] The translucent components 14 also meet ~~Federal Aviation Association (FAA) certification~~ Boeing's D6-51377 requirements for materials used overhead in the passenger cabin area 12. These certification requirements state that the composite material 70 must not drip or dislodge from their designated flight configuration such that they inhibit egress when exposed to a temperature of 500 degrees Fahrenheit (260 degrees Celsius) for five minutes.

Please replace paragraph [0025] with the following amended paragraph:

[0025] The fibrous material 72 is added to the PPSU substrate 74, 76 material to provide retention of the composite panel 60 in the event of fire. The fibrous material 72 laminated within the substrate or substrates 74, 76 allows compliance with the FAA certification requirement for flammability resistance properties, including heat release, vertical burn, smoke emissions tests, and ~~toxic fume emissions tests~~ Boeing's D6-51377 Toxic Gas Emissions Limits. Long glass fibers 78 are preferred for use as the fibrous material 72, 70 due to their ability to act as thermal insulators, their ability to allow the substrate 70 to pass flammability tests, their ability to not overly decrease light transmissivity, and their overall appearance within the PPSU substrate 74, 76.

Please replace paragraph [0028] with the following amended paragraph:

[0028] The fiber 78 density, thickness, and orientation are all properties that may be optimized for a particular application. A higher density of fibers 78, or thicker fibers 78, within the PPSU substrate 74 will provide additional strength and will act as a heat sink when exposed to fire while adversely affecting light transmissivity and overall weight. A particular fiber orientation, or fiber weave, may also affect weight, flammability, overhead fire retention, material strength, and light transmission. Thus, if more light transmission is desired, such as in an backlit light sign 22 or emergency exit sign, the fiber density, thickness, and orientation will be set to allow maximum transmissivity while ~~maintaining the~~ having an average allowable heat release not to exceed the 65/65 standard. With tray tables 20, the density of glass fiber, for example, may be increased compared to backlit light signs 22, as transmissivity of light is not necessary.

Please replace paragraph [0036] with the following amended paragraph:

[0036] In the continuous impregnation technique, molten PPSU resin making up the substrate material 74 is introduced from an extruder having a die set between a pair of rollers contained within a calendar roll stack. At the same time, a sheet layer of fibrous material 72 is unrolled from a roller onto the molten layer between the first set of rollers. The calendar roll stack, preferably containing three or more stainless steel calendar ~~rolls~~ roll stacked vertically, presses the fibrous material sheet layer and

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molten layer to a desired thickness, therein impregnating the PPSU resin within the fibrous material 72. The composite material 70 formed then is removed from the calendar ~~rolls-stack~~ roll stacks on a conveyor belt line and allowed to cool, therein forming a cooled, hardened composite sheet 70.

Please replace paragraph [0037] with the following amended paragraph:

[0037] The continuous impregnation technique offers slightly different benefits to the thermal pressing technique. For example, because the process is continuous, the composite sheet material 70 may be formed at a quicker rate than with the thermal pressing technique. This is also cost effective. Also, the thickness of the material formed may be easily modified by adjusting the clearance gap between the respective rollers of the calendar roll stack. Additionally, the process also automates impregnation techniques that would otherwise have to be accomplished manually.

Please replace the Abstract, paragraph [0043], with the following amended paragraph:

[0043] A translucent composite material that can be used in various airplane interior applications that allows sufficient light transmissivity while preferably meeting Federal Aviation Administration (FAA) flammability requirements for overhead materials in the cabin of a commercial aircraft. The material also meets FAA standards regarding vertical burn, smoke emissions tests, and ~~toxic fume emissions tests~~ Boeing's D6-51377 Toxic Gas Emissions Limits. The composite material is formed by laminating long glass fibers and (PPSU) into a composite sheet under controlled heat and pressure. The composite sheet is then cut, bent or thermoformed to form the desired part. The parts formed are available for a wide variety of uses within the passenger cabin of a commercial aircraft. The long glass fibers may be unidirectional or weaved into a glass cloth like material. While preferably formed for airplane interior applications, these components may also be used in other aerospace or non-aerospace applications.